CLAIMS

1. An apparatus for outputting signals from a marker buoy, comprising:

a laser light source configured for projecting at least one beam of light;

housing for retaining said collimated light source, and configured for attachment to a buoy;

electromechanical actuators for varying the horizontal and vertical angle of said collimated light source;

a tilt sensor;

a control system which generates signals to modulate the movement of said electromechanical actuators in response to signals from said tilt sensor to maintain desired directions of light projections despite buoy motion;

an electronic compass for registering compass orientation from which buoy horizontal orientation and the horizontal direction of devices coupled to said buoy may be determined;

a means for directing a beam of audio sounds and/or speech in a selected horizontal (compass) angle from said apparatus and dispersed over a horizontal angle from ten degrees to thirty degrees;

wherein said audio sounds and/or speech generated is responsive to the horizontal (compass) direction from the buoy giving listeners an indication of angular position in relation to said buoy;

sensors for registering the status of said apparatus and/or systems coupled to said buoy;

sensors for registering ambient conditions at said buoy;

wherein said sensors are selected from the group of ambient sensors consisting of air temperature, fog intensity, fog distance, humidity, wind speed, wind direction, sky obscuration, wave activity, water temperature, light intensity, audio transducers and video imagers;

a radio frequency communications link configured for conveying sensor data from said apparatus at said buoy and for receiving remote control commands to said apparatus.

2. An apparatus as recited in claim 1:

further comprising a large area display covering at least one square foot of the exterior of said buoy and configured for indicating conditions detected by said apparatus;

wherein said large area display is a non-volatile display;

wherein said display comprises an electronic ink display.

3. An apparatus for powering a marker buoy comprising:

an electrical generator configured to generate an electrical current in response to a mechanical input;

wherein said electrical generator is configured for mounting on a marker buoy;

a mechanical coupling attaching the mechanical input of said generator to an fixed anchor or to an elongated member joining to said fixed anchor;

an electrical energy storage device;

a power system for receiving energy from said electrical generator and conditioning it for storage on said electrical energy storage device; and

a solar collector assembly coupled to said power system, for converting ambient light energy to electrical energy for storage on said electrical energy storage device;

wherein said mechanical input is a lever arm extending from said generator.

4. An apparatus for powering a marker buoy comprising:

a fuel tank configured for retention in the base of a buoy;

a fuel cell for converting chemical energy from the fuel in said fuel tank to electrical energy, said fuel cell configured for secure retention in the base of said buoy;

an electrical energy storage device configured for temporarily storing electrical energy from said fuel cell;

fuel level sensor configured to generate a signal in response to retained fuel level; and

a circuit for communicating said retained fuel level indication over a radio communication link to a remote location.

5. An apparatus for preventing loss of synchronization on a vehicle driven by multiple propellers through a fluid, comprising:

means for sensing fluid motion along the hull of said vehicle proceeding toward the propellers;

means for estimating fluid motion conditions that will occur at said propellers in response to pressure gradient measurements; and

means for rapidly altering the rotational speed of the propellers based on said fluid motion estimation to maintain synchronization between propellers.

6. A method of controlling propeller speed when maintaining synchronization, comprising:

(a) estimating the necessary load compensation to prevent synchronization loss;

wherein said estimates are based on measured fluid flow patterns;

(b) varying the field current in generators in response to said load compensation signals;

wherein said generators are mechanically coupled to the rotating outputs driving said propellers.

7. A method for maintaining timeclocks in synchronization, comprising:

(a) modifying a power output signal at predetermined times;

(b) drawing power from the output for operating a clock or time-keeping device;

(c) detecting said modification of said power output; and

(d) adjusting said clock or time-keeping device according to the difference between the time being kept and the time associated with the predetermined time.

8. An apparatus for providing a comfortable resting position, comprising:

a flexible base configured for being supported on a substantially flat surface forward of the seated position of the user;

wherein the underside of said flexible base is configured for securely resting on a tray table from the rear of a airline seat;

a face ring shaped for supporting the head of the user over a cavity within the base;

openings between said cavity within said flexible base and the ambient air for providing ventilation;

hand-arm supports for extending down below the height of a tray table and configured for receiving the hands or arms in a relaxed position.

9. An apparatus as recited in claim 8, further comprising an air filter retained in said opening for filtering air being received by the user.

10. An apparatus for displaying positions and routes on a map display in response to data received from web sites, comprising:

a map database containing street and roadway information;

a map display program at map server web site configured for displaying portions of said map database in response to user control or data received from a web site; and

an interface for collecting location specific information from a non-mapping web site and displaying the information over the street and roadway information generated by the map display program;

wherein said location specific information can include animation data depicting nodes along a route;

wherein said location specific information can include graphic elements provided by said non-mapping web site.

11. An apparatus for displaying temporal related messages with limited user intervention, comprising:

a display array;

a user interface adapted with audio output and microphone input;

an electronic controller operably connected to said user interface, and said display array;

a speech to text converter within said controller for converting selected user input through said microphone to text for display on said display; and

wherein said electronic controller is adapted to convert user commands to selected data output on said display which may include user voiced messages which are converted to messages displayed on said display array;

wherein said voice input may be converted to display commands in response to display command context.

12. An apparatus for tracking tool location to prevent loss, comprising:

a portable housing with self contained power source configured for being carried by a user as a tracking unit;

an RFID transceiver within said tracking unit configured for challenging RFID units attached to tools to be kept track of;

an annunciator for indicating the status or location of tools being tracked;

memory for retaining a list of tools and status for each tool;

a computer processor executing instructions from memory and controlling the operation of said RFID transceiver and said annunciator; and

programming configured to execute on said computer processor for,

attempting communication with RFID units associated with each tool,

annunciating tools from the list of tools from which a response to the challenge is not received.

13. An apparatus as recited in claim 12, further comprising a positioning system for registering the location of the person wearing the tracking unit.

14. An apparatus as recited in claim 13, wherein said positioning system comprises a Global Positioning System (GPS), Inertial Navigation System (INAV), other system or combination of devices.

15. An apparatus as recited in claim 13, further comprising a compass for registering the orientation of said tracking unit.

16. An apparatus as recited in claim 12, further comprising a communication channel configured for communicating with other tracking units for the exchange of tool information.

17. An apparatus as recited in claim 16, wherein said programming further comprises sharing information about RFIDs and tool identifications with other tracking units within the range of said communication channel, and tracking information about tool use and location for tools associated with those additional RFIDs.

18. An apparatus as recited in claim 12, wherein said annunciator comprises a display and/or audio annunciator from which the description of a tool may be communicated to the user.

19. An apparatus as recited in claim 12, wherein said RFID transceiver is configured for communicating with RFID tags having a specific coding and which are within range of the RFID transceiver.

20. An apparatus as recited in claim 19, wherein said RFID transceiver issues a challenge and detects a response from those RFID tags with a unit code matching the challenge.

21. An apparatus as recited in claim 12, wherein said RFID transceiver is configured to generate sufficient energy in a form allowing a passive RFID unit to utilize energy received from the RFID transceiver when generating a response.

22. An apparatus for applying a liquid repair material to pavement cracks and voids, comprising:

a base adapted for mounting to a vehicle;

means for sensing cracks and voids in a pavement surface and generating a responsive signal, said means for sensing cracks being mounted on said base;

a mechanical translation stage attached to said base;

a reservoir for retaining liquid repair materials;

a nozzle adapted for dispensing liquid repair materials from said reservoir and mounted to said translation stage;

whereby said nozzle mounted to said translation stage is adapted for positioned dispensement of liquid repair material from said reservoir over selected portions of said pavement surface;

a flow control assembly coupled to said nozzle for regulating the flow of said liquid repair material from said reservoir; an electronic controller device operably coupled to said mechanical translation stage, said flow control assembly and said means for sensing; and

said electronic controller adapted to generate control signals for positioning said nozzle on said translation stage to align with said cracks and voids in said pavement and for activating said flow control assembly to dispense a sufficient quantity of liquid repair materials through said nozzle for sealing and or repairing said cracks and voids in said pavement.

23. An apparatus as recited in claim 22, wherein said apparatus comprises a plurality of said nozzles which are adapted for movement in one or more mechanical translation stages.

24. An apparatus as recited in claim 23:

wherein multiple mechanical translation stages are attached to said base;

wherein said multiple translation stages are adapted for moving more than one of a multiple of said nozzles into alignment with cracks and voids to be sealed and/or repaired;

wherein at least one of said mechanical translation stages are positioned in a substantially lateral direction in relation to the longitudinal movement direction of said vehicle to which said base may be mounted;

25. An apparatus for dispensing fluids for consumption, comprising

a fluid container configured to retain a water or a beverage;

a valve coupled to said fluid container configured for being opened by mouth or one hand for accessing the fluid contents of said fluid container; and

a means for restricting the amount of fluid which can be consumed from said fluid container in response to opening of said valve;

wherein said restricted amount of fluid comprises a between approximately five percent and thirty five percent of the total fluid container volume.

26. An apparatus for dispensing fluids for consumption, comprising

a housing configured for retaining fluid including water and beverages;

a first fluid chamber in said housing;

a valve coupled to said first fluid chamber configured for being opened by mouth or one hand for accessing the fluid contents of said first fluid chamber; and

a second fluid chamber sealed against said first fluid chamber for retaining a reserve quantity of fluid; and

means for unsealing second fluid chamber from said first fluid chamber to access the reserve quantity of fluid.

27. A visor frame comprising:

a structural frame member configured to wrap around a portion of the head of the wearer;

supports extending at intervals from the structural frame member;

at least one elongated tension member slidable engaged with said supports whose ends are attached near the ends of said structural frame; and

a means for adjusting the tension applied through said elongated tension member and said supports to said structural frame thereby changing the tension with which the visor frame is retained on the head of a wearer.

28. A visor frame as recited in claim 26, wherein said means comprises a rotating knob that engages said elongated tension member to change its tension in response to knob adjustments.

29. A toy apparatus, comprising:

a power source;

at least one environmental sensor;

an audio output;

a radio frequency response circuit configured to detect a challenge from a radio frequency transceiver held in sufficient proximity; and

a microcontroller circuit configured for generating an audio output in response to said detected challenge, the signal response from said environmental sensor, and/or time delays determined by said microcontroller.

30. A toy apparatus as recited in claim 29, wherein said challenge contains a selective code to which said radio frequency response is configured to detect.

31. A fishing lure, comprising:

a housing having a slight positive buoyancy in water;

wherein said housing is configured in the shape of a bait item and contains;

at least one hook assembly extending from said housing;

an anchor point configured for attachment of a leader line;

an electrical power source; and

a fluid propulsion system receiving drive power from said electrical power source, wherein motion is imparted to said housing and limited by the length of said leader line.

32. A fishing lure as recited in claim 31, wherein said fluid propulsion system comprises:

a motor coupled to said electrical power source; and

a propeller assembly, or ducted fan retained between an intake and outlet duct;

33. A fishing lure as recited in claim 31, further comprising a control circuit configured for modulating the activity of said motor to vary the path of said lure.

34. A fishing lure as recited in claim 31, further comprising a light output coupled to said electrical power source.

35. A fishing lure as recited in claim 34, wherein said light output is driven by the output of a control circuit which modulates the intensity of the light output.

36. A fishing lure as recited in claim 34, wherein said light output comprises an LED, or OLED.

37. A fishing lure as recited in claim 31, wherein said power source comprises a battery.

38. A fishing lure as recited in claim 31, wherein said power source comprises a capacitor configured for charging at the point of use by a charging device configured for use with said lure.

39. A fishing lure as recited in claim 31, further comprising a power switch for connecting the source of electrical power to a control circuit configured for controlling the operation of said propulsion system or a light output.

40. A fishing lure as recited in claim 39, wherein said control circuit is connected to said fluid propulsion system whose state of activity is modulated to alter the movement paths through the water of said housing;

further comprising an audio annunciator configured for generating audio signals to alert predator fish and increase the range by which fish are attracted to the lure.

41. An apparatus for outputting signals from a marker buoy, comprising:

collimated light source configured for projecting at least one beam of light;

housing for retaining said collimated light source, and configured for attachment to a buoy;

means for varying the horizontal and vertical angle of said collimated light source; and

means for sensing the motion of a buoy to which said collimated source is attached and modulating said horizontal and said vertical angle of said collimated light source to maintain desired directions of light projections despite buoy motion.

42. An apparatus as recited in claim 41, wherein said collimated light source comprises at least one laser light source.

43. An apparatus as recited in claim 41, wherein said means for varying the horizontal and vertical angle of said collimated light source comprises electromechanical actuators.

44. An apparatus as recited in claim 41, wherein said means for varying the horizontal angle of said collimated light source comprises an electromechanical actuator coupled for rotating said housing.

45. An apparatus as recited in claim 41, wherein said means for varying the vertical angle of said collimated light source comprises an electromechanical actuator coupled to a mirror for redirecting the light reflection.

46. An apparatus as recited in claim 41, wherein said means for sensing the motion of a buoy to which said collimated source is attached and modulating said horizontal and said vertical angle of said collimated light source, comprises:

a tilt sensor; and

a control circuit configured to generate signals for modulating the horizontal and vertical direction of said collimated light source in response to the signals generated from said tilt sensor.

47. An apparatus as recited in claim 41, further comprising an electronic compass for registering compass orientation from which buoy horizontal orientation and the horizontal direction of devices coupled to said buoy may be determined.

48. An apparatus as recited in claim 47, further comprising a means for directing a beam of audio sounds and/or speech in a selected horizontal (compass) angle from said apparatus.

49. An apparatus as recited in claim 48, wherein said beam of audio sounds and/or speech is directed over an angular of from two degrees to forty five degrees.

50. An apparatus as recited in claim 48, wherein said beam of audio sounds and/or speech is directed over an angular spread of from ten degrees to thirty degrees.

51. An apparatus as recited in claim 50, wherein said audio sounds and/or speech generated is responsive to the horizontal (compass) direction from the buoy giving listeners an indication of angular position in relation to said buoy.

52. An apparatus as recited in claim 41, further comprising sensors for registering the status of said apparatus and/or systems coupled to said buoy.

53. An apparatus as recited in claim 41, further comprising sensors for registering ambient conditions at said buoy.

54. An apparatus as recited in claim 53, wherein said sensors are selected from the group of ambient sensors consisting of air temperature, fog intensity, fog distance, humidity, wind speed, wind direction, sky obscuration, wave activity, water temperature, and light intensity.

55. An apparatus as recited in claim 53, wherein said sensors are selected from the group of ambient sensors consisting of audio transducers and video imagers.

56. An apparatus as recited in claim 53, further comprising a communications link configured for conveying sensor data from said apparatus at said buoy and for receiving remote control commands to said apparatus.

57. An apparatus as recited in claim 41, further comprising a means for detecting objects at a distance from said apparatus.

58. An apparatus as recited in claim 41, further comprising a large area display covering at least one square foot of the exterior of said buoy and configured for indicating conditions detected by said apparatus.

59. An apparatus as recited in claim 58, wherein said large area display is a non-volatile display;

wherein said display comprises an electronic ink display.

60. An apparatus for powering a marker buoy comprising:

an electrical generator configured to generate an electrical current in response to a mechanical input;

wherein said electrical generator is configured for mounting on a marker buoy;

a mechanical coupling attaching the mechanical input of said generator to a location subject to less motion than experienced by said buoy;

an electrical energy storage device;

a power system for receiving energy from said electrical generator and conditioning it for storage on said electrical energy storage device.

61. An apparatus as recited in claim 60, wherein said mechanical coupling attached between the mechanical input of said generator and an anchor point attached to the floor of a body of water, or to an elongated member that attaches to said floor of said body of water.

62. An apparatus as recited in claim 60, further comprising a solar collector assembly coupled to said power system, for converting ambient light energy to electrical energy for storage on said electrical energy storage device.

63. An apparatus for powering a marker buoy comprising:

a fuel tank configured for retention in the base of a buoy;

a fuel cell for converting chemical energy from the fuel in said fuel tank to electrical energy, said fuel cell configured for secure retention in the base of said buoy;

an electrical energy storage device configured for temporarily storing electrical energy from said fuel cell.

64. An apparatus as recited in claim 63, wherein said electrical storage device comprises batteries or capacitors.

65. An apparatus as recited in claim 63, further comprising:

fuel level sensor configured to generate a signal in response to retained fuel level; and

a circuit for communicating said retained fuel level indication over a radio communication link to a remote location.

66. An apparatus for providing a comfortable resting position, comprising:

a flexible base configured for being supported on a substantially flat surface forward of the seated position of the user;

a face ring shaped for supporting the head of the user over a cavity within the base; and

openings between said cavity within said flexible base and the ambient air for providing ventilation.

67. An apparatus as recited in claim 66:

wherein said flexible base is inflatable toward reducing stored size;

wherein a fill stem is providing on said flexible base for inflating it.

68. An apparatus as recited in claim 66, wherein said flexible base is configured for securely resting on a generally horizontal surface.

69. An apparatus as recited in claim 68, wherein said flexible base is configured for securely resting on a tray table from the rear of a airline seat.

70. An apparatus as recited in claim 66, further comprising hand-arm supports for extending down below the height of a tray table and configured for receiving the hands or arms in a relaxed position.

71. An apparatus as recited in claim 70, wherein the length of said hand-arm supports are adjustable.

72. An apparatus as recited in claim 70, wherein said hand-arm supports are configured as an elongated loop extending from the each side of said flexible base;

73. An apparatus as recited in claim 66, further comprising an air filter retained in said opening for filtering air being received by the user.

74. An apparatus as recited in claim 66, further comprising a message holder on the exterior of said flexible base configured for reminding flight attendants of the wishes of the passengers.

75. An apparatus for reducing the extraneous loads placed on a vehicle engine during acceleration, comprising:

acceleration pedal sensor configured to sense if attempted acceleration exceeds a predetermined threshold; and

a control circuit for disengaging the air conditioning clutch in response to attempted acceleration exceeding said threshold.

76. An apparatus as recited in claim 75, wherein said control circuit is configured for reducing the field current in the alternator in response to acceleration which exceeds the threshold.

77. An apparatus as recited in claim 75, wherein said control circuit comprises a controller for the engine which is configured with accelerator pedal sensing, air conditioner clutch control output and programming for disengaging the clutch in response to a sufficient acceleration.

78. An apparatus as recited in claim 77, wherein said engine controller is further configured to reduce the field current in the alternator in response to acceleration which exceeds the threshold.

79. A system for registering vehicles automatically, comprising:

a electronic imager configured for capturing wide angle and zoomed images;

a computer configured to perform image processing;

programming operable on said computer for,

zooming in to the image of the license plate of a vehicle;

extracting license plate information from said image;

registering status of vehicle;

checking history of vehicle;

displaying relevant information about vehicle to user.

80. An apparatus for reserving a parking space, comprising:

housing configured for attachment to a parking space;

means for detecting the proximity of a vehicle parking over said housing;

an audio alarm configured for generating a loud alarm sequence;

a wireless communication link; and

a control circuit that activates said audio alarm upon said means detecting a parking vehicle, unless communication is received over said wireless communication link indicating that the vehicle is that of the space owner.

81. In a tape measure having an elongated ruled measure which extends from a housing, the improvement comprises:

a recess in the side of the tape measure adapted for receiving and retaining a small notepad.

82. The improvement as recited in claim 2, further comprising a storage compartment on said tape measure for receiving a writing implement.

83. In a tape measure having an elongated ruled measure which extends from a housing, the improvement comprises:

electronically readable markings on the elongated ruled measure; and

a reader assembly adapted to generate signals in response to reading of said electronically readable markings on said extended elongated ruled measure;

an output device for annunciating measurements; and

a controller operably connected to said reader assembly and said output device and adapted to generate length readings which are annunciated on said output device in response to the extension of said elongated ruled measure.

84. The improvement as recited in claim 83, wherein said output device comprises an audio output device, or a display, which is configured to annunciate measurements registered by said tape measure.

85. In a tape measure having an elongated ruled measure which extends from a housing, the improvement comprises:

electronically readable markings on the elongated ruled measure; and

a reader assembly adapted to generate signals in response to reading of said electronically readable markings on said extended elongated ruled measure;

a controller circuit operably connected to said reader assembly and adapted to communicate with a display enabled device for registering the associated measurements.

86. An apparatus for securing articles being transported in a moving vehicle, comprising:

at least one flexible bladder adapted for deployment within a storage area of a vehicle;

means for filling and emptying said bladder;

a control device for regulating said means for the filling and emptying of said bladder;

wherein control device activates said bladder which expands to a predetermined pressure to retain articles within said storage area and prevent rattling or shifting of contents, and may be emptied so that articles may be added or removed form said storage area.

87. An apparatus as recited in claim 86, wherein said means for filling and emptying said bladder comprises:

a reversible pump; and

a source of power for operating said pump.

88. An apparatus as recited in claim 86, wherein said pump is electrically driven and operates from a source of electrical power.

89. An apparatus for verifying that the lights on an automobile trailers are operating correctly, comprising:

a housing;

a connector adapted for establishing an electrical connection with the lighting receptacle plug from a trailer;

a voltage source adapted for generating a voltage across selected connections;

a current sensor adapted to sense current flow through said connections in response to the voltage generated by said voltage source;

a controller connected to said current source and adapted to sense if said current flow is within a predetermined range of current; and

an annunciator operatively coupled to said controller and adapted to indicate if the current draw through said connections is within a predetermined range.

90. An apparatus as recited in claim 89, wherein said apparatus is portable and sufficiently small as to be easily held in one hand.

91. An apparatus as recited in claim 89, wherein said apparatus is powered from a power source within or connected to said apparatus.

92. An apparatus as recited in claim 91, wherein said apparatus is powered from power retention devices within said housing.

93. An apparatus as recited in claim 92, wherein said power retention devices may be selected from the group of power retention devices consisting of batteries, fuel cells, capacitors, or combinations thereof.

94. An apparatus as recited in claim 93, wherein said capacitors may be charged from an external source of power.

95. An apparatus as recited in claim 94, wherein said external source of power comprises the charge current supplied from a vehicle power connection.

96. An apparatus as recited in claim 95, wherein said vehicle power connection comprises a cigarette lighter receptacle.

97. An apparatus as recited in claim 89, wherein said voltage source comprises the voltage supplied from said power source.

98. An apparatus as recited in claim 97, wherein said voltage source comprises the voltage from said power source after passing through a voltage regulator.

99. An apparatus as recited in claim 89, wherein said current sensor comprises a sense resistor from said voltage source, wherein the voltage drop across said sense resistor is indicative of the current flow.

100. An apparatus as recited in claim 89, wherein said current sensor comprises a current sensing element that provides an output in response to the level of current flow.

101. An apparatus as recited in claim 89, wherein said current sensor comprises an inductive sensor.

102. An apparatus as recited in claim 89, further comprising a switching device wherein said voltage source may be connected to any of a plurality of trailer lights.

103. An apparatus as recited in claim 102, wherein said trailer lights may be selected from the group of lighting elements consisting of: running lights, brake lights, turn signals, reverse lights, left turn signal, and right turn signal.

104. An apparatus as recited in claim 102, wherein said switching device is operated manually.

105. An apparatus as recited in claim 102, wherein said switching device is operated by said controller, in response to user input to said controller.

106. An apparatus as recited in claim 102, wherein said switching device is operated by said controller and automatically switches said voltage source between connections on said lighting receptacle.

107. An apparatus as recited in claim 106, wherein said switching device is adapted to perform said automatic switching sequentially through a series of connections to apply said voltage source to trailer lighting elements.

108. An apparatus as recited in claim 107, wherein said series of connections comprises each of the available lighting circuits within said lighting receptacle.

109. An apparatus as recited in claim 89, further comprising non-volatile data storage operatively coupled to said controller for storing configuration information for said apparatus.

110. An apparatus as recited in claim 109, wherein said configuration information includes information as to which connections are to be tested.

111. An apparatus as recited in claim 109, wherein said configuration information includes current values for selected connections.

112. An apparatus as recited in claim 111, wherein said current values comprise nominal current values that may be read by said controller when determining if said current flow is within a predetermined range of current.

113. An apparatus as recited in claim 89, wherein said controller comprises one or more digital circuit elements selected from the group of digital circuit elements consisting of microcontrollers, microprocessors, gate arrays, programmable logic

elements, custom circuitry containing digital circuitry, discrete logic circuits, and combinations thereof.

114. An apparatus as recited in claim 89, wherein said controller comprises a processing element and programming for,

operating said switching element to select which trailer light connection said voltage source is to be applied,

registering said current from said current sensor,

comparing said current value with a predetermined threshold current value,

activating an annunciator in response to the result of said comparison.

115. An apparatus as recited in claim 89, wherein said annunciator comprises a display adapted to provide visual indications of whether said current falls within said predetermined range.

116. An apparatus as recited in claim 115, wherein said display comprises indicator elements which light up or change appearance to provide visual indications as to whether said sensed current has fallen within the predetermined range.

117. An apparatus as recited in claim 116, wherein said display comprises a display adapted for displaying icons, numbers, textual information, or combinations thereof.

118. An apparatus as recited in claim 117, wherein said display comprises LED indicator elements.

119. An apparatus as recited in claim 117, wherein said display comprises an LCD display.

120. An apparatus as recited in claim 117, wherein said display comprises an electronic ink display.

121. An apparatus as recited in claim 115, wherein said annunciator comprises an audio annunciator adapted to generate indications of whether said current falls within said predetermined range.

122. An apparatus for applying a liquid repair material to fill pavement cracks and voids, comprising:

means for sensing cracks and voids in a pavement surface and generating a responsive signal, said means for sensing cracks being mounted on said base;

a mechanical translation stage attached to said base;

a reservoir for retaining liquid repair materials;

a nozzle adapted for dispensing liquid repair materials received from a reservoir and mounted to said translation stage;

whereby said nozzle mounted to said translation stage is adapted for positioned dispensement of liquid repair material from said reservoir over selected portions of said pavement surface;

a flow control assembly coupled to said nozzle for regulating the flow of said liquid repair material from said reservoir;

an electronic controller device operably coupled to said mechanical translation stage, said flow control assembly and said means for sensing; and

said electronic controller adapted to generate control signals for positioning said nozzle on said translation stage to align with said cracks and voids in said pavement and for activating said flow control assembly to dispense a sufficient quantity of liquid repair materials through said nozzle for sealing and or repairing said cracks and voids in said pavement.

123. An apparatus as recited in claim 122, wherein said apparatus comprises a plurality of said means for sensing cracks and voids.

124. An apparatus as recited in claim 122, wherein said means for sensing cracks and voids comprises a mechanical feeler device.

125. An apparatus as recited in claim 124, wherein said mechanical feeler device comprises:

a plurality of elongated members retained in a predetermined position in relation to said base and having a free end adapted for maintaining contact with the surface of said pavement; and

a sensor operably coupled to each of said elongated members to detect movement therein.

126. An apparatus as recited in claim 122, wherein said means for sensing cracks and voids comprises an optical sensing device.

127. An apparatus as recited in claim 126, wherein said optical sensing device comprises a light source and a light sensitive receptor.

128. An apparatus as recited in claim 126, wherein said optical sensing device may be selected from the group of optical sensing devices consisting of cameras, photoreceptors, reflective sensors, photodiodes, and photocells.

129. An apparatus as recited in claim 126, wherein said optical sensing device comprises an array of optical sensors.

130. An apparatus as recited in claim 129, wherein said array of optical sensors spans a line adapted to detect cracks and voids which pass beneath any portion of said array of optical sensors.

131. An apparatus as recited in claim 130, wherein said array spanning said line is adapted to span a lateral portion of said base, in relation to a longitudinal movement of said vehicle to which said base is mounted, whereby cracks and voids along said lateral portion of said pavement may be sensed by said array in response to movement of said vehicle.

132. An apparatus as recited in claim 129, wherein said array of optical sensors spans an area and is adapted to detect cracks and voids which pass beneath any portion of area of said array of optical sensors. .

133. An apparatus as recited in claim 122, wherein said mechanical translation stage comprises:

a track adapted for receiving said nozzles; and

a drive assembly adapted for connection to said nozzle for moving said nozzle along said track.

134. An apparatus as recited in claim 133, wherein said track comprises a substantially straight section of track.

135. An apparatus as recited in claim 122, wherein said mechanical translation stage comprises:

an arm adapted for receiving said nozzles;

a drive assembly adapted for providing angular rotation to said arm to move said nozzle.

136. An apparatus as recited in claim 122, further comprising means for increasing the flow rate of said liquid repair material through said nozzle beyond that of a gravity fed flow rate.

137. An apparatus as recited in claim 136, wherein said means for increasing the flow rate comprises a pump.

138. An apparatus as recited in claim 137, wherein said pump is located between said reservoir and said nozzle.

139. An apparatus as recited in claim 138, wherein said pump is attached to said reservoir.

140. An apparatus as recited in claim 139, wherein said pump is located on said nozzle.

141. An apparatus as recited in claim 122, wherein said flow control means comprises a valve assembly for controlling the flow of liquid repair material to said nozzle.

142. An apparatus as recited in claim 141, wherein said valve is located within said nozzle.

143. An apparatus as recited in claim 141, wherein said electronic controller comprises:

an electronic computational device;

user interface connected with said controller;

programming adapted for execution on said computational device for responding to the detection of said cracks and voids by positioning said nozzles in alignment with said cracks and voids and activating said flow control to dispense a quantity of liquid repair material.

144. An apparatus as recited in claim 143, wherein said electronic computational device is selected from the group of microcontroller devices, microprocessor devices, signal processors, and sequencers.

145. An apparatus as recited in claim 122, wherein said means for sensing cracks and voids is positioned sufficiently forward of said mechanical translation stage, for a given speed of said apparatus, to allow sufficient time for said nozzles to be positioned in alignment with said cracks or voids as they move rearwardly toward said mechanical translation stage.

146. An apparatus as recited in claim 122, further comprising means for sensing the velocity of said apparatus.

147. An apparatus as recited in claim 146, wherein said electronic controller receives a signal in response to the velocity of said apparatus from said means for sensing velocity.

148. An apparatus as recited in claim 146, wherein said means for sensing said velocity comprises:

a roller assembly adapted for retaining contact with said pavement; and

a rotational sensor coupled to said roller for generating an electrical signal in response to the rotations of said roller traversing said pavement.

149. An apparatus as recited in claim 122, further comprising means of sensing turn rate and direction of said apparatus.

150. An apparatus as recited in claim 122, further comprising means of detecting hills and valleys within said pavement and generating an electronic signal.

151. An apparatus as recited in claim 150, wherein said electronic controller is adapted to receive said electronic signal, and to respond to said electronic signal by adjusting the positioning of said nozzles and dispensement of fluids from said nozzle to compensate for detected variations in distance from the pavement surface.

152. An apparatus as recited in claim 122:

further comprising means of detecting local wind velocity near said nozzles and generating a signal to said controller; and

wherein flow rates and nozzle positioning may be adjusted by said controller to correct wind induced errors.

153. An apparatus as recited in claim 122, further comprising means of detecting physical location of said apparatus.

154. An apparatus as recited in claim 153, wherein said means for detecting physical location comprises a global positioning unit, an inertial navigation system, or combinations thereof.

155. An apparatus as recited in claim 122, further comprising means for logging the extent of repair and sealing work performed.

156. An apparatus as recited in claim 155, wherein said means for logging comprises a data storage area operably coupled to said electronic controller into which information about the dispensing of said liquid repair material is entered.

157. An apparatus as recited in claim 156, wherein said means for logging is adapted to log the physical position of said apparatus.

158. An apparatus as recited in claim 156, wherein said means for logging is adapted to record a mapping of each crack or void as it is filled by said apparatus.

159. An apparatus for manually dispensing liquid repair material onto cracks and voids in a pavement surface, comprising:

a shaft adapted for being positioned manually;

means for sensing cracks and voids in a pavement surface and generating a responsive signal, said means for sensing cracks being mounted on said base;

a mechanical translation stage attached to said shaft;

a nozzle adapted for dispensing liquid repair materials from a source of a fluid repair material;

whereby said nozzle mounted to said translation stage is adapted for positioned dispensement of liquid repair material from said reservoir over selected portions of said pavement surface;

a flow control assembly coupled to said nozzle for regulating the flow of said liquid repair material from said reservoir;

an electronic controller device operably coupled to said mechanical translation stage and said means for sensing; and

said electronic controller adapted to generate control signals for positioning said nozzle on said shaft to align with said cracks and voids in said pavement.

160. An apparatus as recited in claim 159, further comprising a manual valve controlled by a user for dispensing fluid repair material.

161. An apparatus as recited in claim 159, further comprising a electronic valve controlled by said electronic controller for dispensing fluid repair material in response to the amount determined in response to said signal from said means for sensing.